	Application No.	Applicant(s)
Notice of Allowability	10/605,698	LIN, TAO
	Examiner	Art Unit	
	Shawn S. An	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *5/10/07*.

2. ☒ The allowed claim(s) is/are *1,5-18 and 20*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None of the:

       1. ☐ Certified copies of the priority documents have been received.

       2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

       3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

       1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application

6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

EXAMINER'S AMENDMENT

I.   An Examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to Applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

IN THE CLAIMS:

A)   Please amend claims 10-18 as follows:

10. (currently amended) The MPEG decoder of claim 1 ~~2~~ wherein the current block contains 64 pixels in 8 rows and 8 columns represented by 64 DCT coefficients.

11. (currently amended) The MPEG decoder of claim 1 ~~2~~ wherein a coefficient in the first row and in the first column is not AC predicted.

12. (currently amended) A ~~computer-implemented-method~~<u>computer-readable medium storing a computer program</u> for decoding compressed video comprising:
parsing an encoded bit-stream for an AC prediction flag for a current block;
sending a current portion of the encoded bit-stream for the current block to a unified
        stage;
in the unified stage, decoding the current portion of the encoded bit-stream with a
        variable-length decoder to generate quantized discrete cosine transform (DCT)
        coefficients;
in the unified stage, performing inverse-quantization on the quantized DCT coefficients
        using a current quantization parameter for the current block to generate unified-
        stage output coefficients;

selecting as selected coefficients the unified-stage output coefficients for input to an

inverse transformer when the AC prediction flag is false;

generating pixels for the current block from the selected coefficients by performing an

inverse discrete cosine transform;

storing the selected coefficients for a first row and for a first column as stored

coefficients;

storing the current quantization parameter as a stored quantization parameter;

generating predicted coefficients for the first row or for the first column when the AC

prediction flag is true by combining the unified-stage output coefficients, the

current quantization parameter, a stored quantization parameter and stored

coefficients for a prior block to emulate AC prediction, by:;

generating a current difference from the unified-stage output coefficients and the

current quantization parameter;

generating a prior difference from the stored coefficients and the stored

quantization parameter;

combining the current difference and the prior difference to generate a combined

difference;

adjusting the combined difference with the current quantization parameter to

generate the predicted coefficients;

and

selecting as selected coefficients the predicted coefficients for input to the inverse

transformer for the first row or for the first column when the AC prediction flag is

true,

whereby AC prediction is performed after inverse-quantization.

13. (currently amended)   The computer-readable mediumcomputer-implemented

method of claim 12 wherein the prior block is an immediately prior block to the

current block when the first column is AC predicted;

wherein the prior block is prior block immediately above the current block when the first

row is AC predicted.

14. (currently amended)   The computer-readable medium~~computer-implemented method~~ of claim 12 wherein generating predicted coefficients comprises:

generating a current difference from the unified-stage output coefficients and the current quantization parameter;

generating a prior difference from the stored coefficients and the stored quantization parameter;

combining the current difference and the prior difference and multiplying by two to generate a combined difference; and

adjusting the combined difference with the current quantization parameter to generate the predicted coefficients.

15. (currently amended)   The computer-readable medium~~computer-implemented method~~ of claim 14 wherein generating the current difference for each coefficient comprises:

rounding the current quantization parameter to an odd number to generate an odd current quantization parameter;

subtracting the odd current quantization parameter from a unified-stage coefficient that is one of the unified-stage output coefficients when the unified-stage coefficient is positive, and adding the unified-stage coefficient to the odd current quantization parameter when the unified-stage coefficient is negative;

wherein generating the prior difference for each coefficient comprises:

rounding the stored quantization parameter to an odd number to generate an odd prior quantization parameter;

subtracting the odd prior quantization parameter from a stored coefficient that is one of the stored coefficients when the stored coefficient is positive, and adding the stored coefficient to the odd prior quantization parameter when the stored coefficient is negative.

16. (currently amended)   The <u>computer-readable medium</u><s>computer-implemented</s>
        <s>method</s> of claim 15 wherein generating the prior difference for each coefficient
        further comprises:
adjusting the prior difference by multiplying and integer-dividing by the current
        quantization parameter.

17. (currently amended)   The <u>computer-readable medium</u><s>computer-implemented</s>
        <s>method</s> of claim 16 wherein adjusting the combined difference with the current
        quantization parameter to generate the predicted coefficients comprises:
rounding the current quantization parameter to an odd number to generate an odd
        current quantization parameter;
subtracting the odd current quantization parameter from a combined difference when
the combined difference is negative, and adding the combined difference to the odd
current quantization parameter when the combined difference is positive.

18. (currently amended)   A computer-program product comprising:
a computer- <s>usable</s> <u>readable memory</u> medium <u>storing</u> <s>having</s> computer-readable
        program code means embodied therein for decoding and AC-predicted video bit-
        stream, the computer-readable program code means in the computer-program
        product comprising:
parser means for parsing an encoded bit-stream for an AC prediction flag for a current
        block and for extracting a current portion of the bit-stream for the current block;
unified stage means for decoding the current portion of the bit-stream with a variable-
        length decoder to generate quantized discrete cosine transform (DCT)
        coefficients, and for inverse-quantizing the quantized DCT coefficients with a
        current quantization parameter for the current block to generate unified-stage
        output coefficients;
inverse transform means for generating pixels for the current block from selected
        coefficients by performing an inverse discrete cosine transform;

multiplex means, coupled to supply the selected coefficients to the inverse transform

means, for selecting as the selected coefficients the unified-stage output

coefficients when the AC prediction flag is false, and for selecting as selected

coefficients predicted coefficients for a first row or for a first column when the AC

prediction flag is true,

storage means for storing the selected coefficients for the first row and for the first

column as stored coefficients and for storing the current quantization parameter

as a stored quantization parameter; and

prediction means for generating the predicted coefficients for the first row or for the first

column when the AC prediction flag is true by combining the unified-stage output

coefficients, the current quantization parameter, a stored quantization parameter

and stored coefficients for a prior block to emulate AC prediction;

wherein the prediction means further comprises:

current difference means for generating a current difference from the unified-stage

output coefficients and the current quantization parameter;

prior difference means for generating a prior difference from the stored coefficients and

the stored quantization parameter;

combining means for combining the current difference and the prior difference to

generate a combined difference; and

adjust means for adjusting the combined difference with the current quantization

parameter to generate the predicted coefficients,

whereby AC prediction is performed after inverse-quantization.

REMARKS:

II.   Claims 10-18 have been amended as discussed above, as authorized by
Applicant's agent, Stuart T. Auvinen on 5/15/07 and 5/17/07.

III.   Any inquiry concerning this communication or earlier communications from the Examiner should be directed to *Shawn S. An* whose telephone number is 571-272-7324.

SHAWN AN
PRIMARY EXAMINER

5/17/07

Reasons for Allowance

1.   As per Applicant's instructions as filed on 5/10/07, claims 1, 5, 12, and 18 have been amended, and claims 2-4 and 19 have been deleted/canceled.

2.   Claims 1 and 5-11 are allowed.

3.   Claims 12-18 and 20 are allowed after entering the Examiner's Amendment as discussed in the EXAMINER'S AMENDMENT section.

4.   Claims 1, 5-18, and 20 as amended are allowed as having incorporated novel features as discussed in the last Office action as filed on 3/12/07.

The prior art of record fails to anticipate or make obvious the novel features.

Any comments considered necessary by Applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

5.   The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

6.   Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

7.   Any inquiry concerning this communication or earlier communications from the Examiner should be directed to *Shawn S. An* whose telephone number is 571-272-7324.

SHAWN AN
PRIMARY EXAMINER

5/17/07